How Can National Innovation Systems Benefit from the Presence of Multinational Firms?

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Background

Recent research describes subsidiaries of multinational enterprises as being embedded in a 'double network' of information and knowledge flows (Gupta and Govindarajanan 2000; Zanfei 2000; Criscuolo 2004). Information and knowledge is transferred, on the one hand, within the multinational enterprise (MNE). Economic theory explains these flows by the wish of MNEs to utilize existing assets at foreign markets via their subsidiaries (Markusen 1995; Caves 1996 (1974); Markusen 2002). On the other hand, MNE subsidiaries are increasingly developing external relations to exchange knowledge and information with clients, suppliers, competitors or universities and public research organisations in their host countries (Birkinshaw, Hood and Jonsson 1998; Almeida 1999; Frost 2001; Castellani and Zanfei 2002; Almeida and Phene 2004). This is surprising, given that centralized research and development (R&D) is associated with a number of advantages and home innovation systems exert strong centripetal forces leading to systemic lock-ins (Narula 2002; von Zedtwitz and Gassmann 2002; Gersbach and Schmutzler 2006). Centralized R&D strategies, however, seem to be unable to cope with the information and knowledge requirements of firms with operations spanning many countries. As a consequence, MNEs are shifting to new ways of organizing global innovative activities and increasingly develop and improve original technology outside of their home countries instead of just utilizing the existing stock of knowledge in foreign markets.

National innovation systems can gain considerable advantages from the presence of foreign-owned enterprises. One of the greatest advantages is technological learning and the transfer of information and knowledge from foreign-owned enterprises to domestic organisations. Spillovers from MNE subsidiaries to the local economy, however, do not occur automatically. They are bound to specific preconditions of the host innovation system as well as results from different capabilities and strategies of foreign-owned enterprises and domestic organisations.

In our paper we explore these specific conditions. We focus on one particular form of external relations, formal innovation co-operation, because we assume that exchange of knowledge is most likely and intensive in this type of arrangement. The high degree of commitment allows the participating organisations to utilize economies of scale and scope, reduce risks and uncertainty, and makes it easier to build up absorptive capacity for the exchange tacit knowledge (Hagedoorn and Schakenraad 1989; Caloghirou, Ioannides and Vonortas 2003).

Research question

We ask: What factors determine external co-operation of foreign-owned enterprises in a particular national innovation system?

We test for firm-specific factors (size, R&D intensity, innovation strategy, absorptive capacity), as well as industry-specific determinants and examine the role of the host country in terms of market size, innovative capacity, and potential spillovers.

Data and methods

The empirical analysis draws on the results from the forth wave of the Community Innovation Survey (CIS 4), a firm-level dataset on innovative enterprises in the EU member states. The dataset includes nearly 50,000 observations. We employ regression analysis and a Heckman selection model with the decision of a foreign-owned enterprise to enter a specific form of co-operative agreement as the dependent variable.

Preliminary results

Preliminary results reveal that foreign-owned enterprises have a higher propensity to enter into innovation co-operation compared to their domestically owned counterparts. This result, however, not due to the ownership status, but determined by the enterprises characteristics. Foreign-owned enterprises are usually larger, more R&D intensive and have a higher absorptive capacity than the average domestic enterprise.

The data confirms the ‘double network’ character of co-operations formed by foreign owned enterprises. They are engaged in co-operation with organisations in the host country, as well as in co-operation with international partners to a considerable degree. In contrast to domestic enterprises, foreign-owned enterprises focus on co-operation with partners in science rather than competitors, suppliers and customers. This may be a strategy to avoid involuntary spillovers and protect superior knowledge.

A counter-intuitive result is the finding that international co-operation of foreign-owned enterprises is not restricted to contacts within the enterprise group; in contrast, most international co-operation happens with external partners, including universities abroad. This points to one of the main functions of foreign-owned enterprises in their host innovation systems: building bridges between domestic organisations and foreign stocks of knowledge.

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